CLAIMS

1. An information embedding apparatus for embedding additional information into a content as a digital watermark, comprising:

a generator operable to generate the digital watermark representing the additional information;

an embedding unit operable to embed the digital watermark into the content;

a first transmitter operable to transmit the content provided with the embedded digital watermark; and

a second transmitter operable to transmit the digital watermark or information for reconstructing the digital watermark.

2. An information embedding apparatus according to claim 1, wherein the additional information comprises at least one of identification information and copyright information concerning the content.

3. An information embedding apparatus according to claim 1, wherein

said generator comprises means for generating a key pattern used for indicating the additional information as the digital watermark, and means for generating the digital watermark by using the key pattern; and

said second transmitter transmits the key pattern as the information for reconstructing the digital watermark.

4.   An information embedding apparatus according to claim 1, wherein

said generator comprises means for generating a key pattern used for indicating the additional information as the digital watermark, means for modulating the key pattern according to the complexity of the content, and means for generating the digital watermark by using the modulated key pattern; and

said second transmitter transmits the modulated key pattern as the information for reconstructing the digital watermark.

5.   An information embedding apparatus according to claim 1, wherein said first and second transmitters multiplex the content provided with the embedded digital watermark with the information for reconstructing the digital watermark.

6.   An information embedding apparatus according to claim 1, wherein said first and second transmitters comprise a multiplexer operable to multiplex the content provided with the embedded digital watermark with the information for reconstructing the digital watermark, and an encryptor operable to encrypt the multiplexed content.

7.   An information embedding method for embedding additional information into a content as a digital watermark, comprising:

generating the digital watermark representing the additional information;

embedding the digital watermark into the content;

a first transmitting step of transmitting the content provided with the embedded digital watermark; and

a second transmitting step of transmitting the digital watermark or information for reconstructing the digital watermark.

8.   An information embedding method according to claim 7, wherein the additional information comprises at least one

of identification information and copyright information
concerning the content.

9.   An information embedding method according to claim
7, wherein

said generating step comprises generating a key
pattern used for indicating the additional information as the
digital watermark, and generating the digital watermark by
using the key pattern; and

said second transmitting step comprises transmitting
the key pattern as the information for reconstructing the
digital watermark.

10.   An information embedding method according to claim
7, wherein

said generating step comprises generating a key
pattern used for indicating the additional information as the
digital watermark, modulating the key pattern according to the
complexity of the content, and generating the digital
watermark by using the modulated key pattern; and

said second transmitting step transmits the
modulated key pattern as the information for reconstructing
the digital watermark.

11.   An information embedding method according to claim

7, wherein said first and second transmitting steps multiplex

the content provided with the embedded digital watermark with

the information for reconstructing the digital watermark.

12.   An information embedding method according to claim

7, wherein said first and second transmitting steps comprise

multiplexing the content provided with the embedded digital

watermark with the information for reconstructing the digital

watermark, and encrypting the multiplexed content.

13.   An information processing apparatus for processing a

content in which additional information is embedded as a

digital watermark, comprising:

a first acquiring unit operable to acquire the

content provided with the embedded digital watermark;

a second acquiring unit operable to acquire the

digital watermark or information for reconstructing the

digital watermark; and

a removing unit operable to remove the digital

watermark from the content by using the acquired digital

watermark or the information for reconstructing the digital watermark.

14.   An information processing apparatus according to claim 13, wherein the additional information comprises at least one of identification information and copyright information concerning the content.

15.   An information processing apparatus according to claim 13, wherein the content provided with the embedded digital watermark acquired by said first acquiring unit is encrypted, said information processing apparatus further comprising a decryption unit operable to decrypt the encrypted content.

16.   An information processing apparatus according to claim 13, wherein said first and second acquiring units acquire multiplexed data consisting of the content provided with the embedded digital watermark and the digital watermark or the information for reconstructing the digital watermark, said information processing apparatus further comprising a separation unit operable to separate the multiplexed data into

the content and the digital watermark or the information for reconstructing the digital watermark.

17. An information processing apparatus according to claim 13, wherein

said second acquiring unit acquires, as the information for reconstructing the digital watermark, a key pattern used for indicating the additional information as the digital watermark; and

said removing unit comprises means for acquiring the additional information, means for generating the digital watermark by using the key pattern, and means for subtracting the digital watermark from the content.

18. An information processing apparatus according to claim 13, further comprising an embedding unit operable to embed another digital watermark into the content from which the previous digital watermark is removed by said removing unit.

19. An information processing apparatus according to claim 13, further comprising an authentication processor operable to perform predetermined authentication processing

before said second acquiring unit acquires the digital

watermark or the information for reconstructing the digital

watermark.

20. An information processing apparatus according to

claim 13, wherein

the digital watermark or the information for

reconstructing the digital information acquired by said second

acquiring unit is encrypted; and

said removing unit removes the digital watermark

from the content after decrypting the digital watermark or the

information for reconstructing the digital watermark.

21. An information processing apparatus according to

claim 13, wherein said second acquiring unit acquires the

digital watermark or the information for reconstructing the

digital watermark based on content identification information

unique to the content provided with the embedded digital

watermark.

22. An information processing apparatus according to

claim 13, wherein the information for reconstructing the

digital watermark comprises at least one of information

indicating a basic pattern selected for embedding the digital

watermark, modification information, and shifting information.

23. An information processing apparatus according to

claim 13, wherein

said second acquiring unit receives information

indicating a modulation amount based on characteristics of the

content as the information for reconstructing the digital

watermark; and

said removing unit reconstructs the digital

watermark by encoding the additional information according to

the information indicating the modulation amount so as to

remove the digital watermark from the content.

24. An information processing method for processing a

content in which additional information is embedded as a

digital watermark, comprising:

a first acquiring step of acquiring the content

provided with the embedded digital watermark;

a second acquiring step of acquiring the digital

watermark or information for reconstructing the digital

watermark; and

removing the digital watermark from the content by using the acquired digital watermark or the acquired information for reconstructing the digital watermark.

25. An information processing method according to claim 24, wherein the additional information comprises at least one of identification information and copyright information concerning the content.

26. An information processing method according to claim 24, wherein the content provided with the embedded digital watermark acquired in said first acquiring step is encrypted, said information processing method further comprising decrypting the encrypted content.

27. An information processing method according to claim 24, wherein said first and second acquiring steps acquire multiplexed data consisting of the content provided with the embedded digital watermark and the digital watermark or the information for reconstructing the digital watermark, said information processing method further comprising separating the multiplexed data into the content and the digital

watermark or the information for reconstructing the digital watermark.

28. An information processing method according to claim 24, wherein

said second acquiring step acquires, as the information for reconstructing the digital watermark, a key pattern used for indicating the additional information as the digital watermark; and

said removing step comprises acquiring the additional information, generating the digital watermark by using the key pattern, and subtracting the digital watermark from the content.

29. An information processing method according to claim 24, further comprising embedding another digital watermark into the content from which the previous digital watermark has been removed by said removing step.

30. An information processing method according to claim 24, further comprising performing predetermined authentication processing before said second acquiring step acquires the

digital watermark or the information for reconstructing the digital watermark.

31. An information processing method according to claim 24, wherein

the digital watermark or the information for reconstructing the digital information acquired in said second acquiring step is encrypted; and

said removing step removes the digital watermark from the content after decrypting the digital watermark or the information for reconstructing the digital watermark.

32. An information processing method according to claim 24, wherein said second acquiring step acquires the digital watermark or the information for reconstructing the digital watermark based on content identification information unique to the content provided with the embedded digital watermark.

33. An information processing method according to claim 24, wherein the information for reconstructing the digital watermark comprises at least one of information indicating a basic pattern selected for embedding the digital watermark, modification information, and shifting information.

34. An information processing method according to claim 24, wherein

said second acquiring step receives information indicating a modulation amount based on characteristics of the content as the information for reconstructing the digital watermark; and

said removing step reconstructs the digital watermark by encoding the additional information according to the information indicating the modulation amount so as to remove the digital watermark from the content.

35. An information processing apparatus for managing digital watermark information to be embedded into a content, wherein at least part of the digital watermark information is managed in correspondence with the content into which the digital watermark information is to be embedded.

36. An information processing apparatus according to claim 35, wherein at least part of the digital watermark information is managed in encrypted form.

37. An information processing apparatus according to claim 35, wherein at least part of the digital watermark information is managed in relation to the content into which the digital watermark information is to be embedded and to unique time information.

38. An information processing apparatus according to claim 35, wherein at least part of the corresponding digital watermark information is supplied to an external device based on content identification information after authentication is performed with said external device.

39. An information processing apparatus according to claim 35, wherein the digital watermark information is generated by modulating a basic pattern used for indicating information to be embedded as a digital watermark according to characteristics of the content, and by encoding the information to be embedded according to an amount by which the basic pattern is modulated, and the modulation amount is managed as part of the digital watermark information.

40. An information processing apparatus according to claim 35, wherein part of the digital watermark information

comprises at least one of information indicating a basic pattern selected for embedding the digital watermark, modulation information, and shifting information.

41. An information processing method for managing digital watermark information to be embedded into a content, wherein at least part of the digital watermark information is managed in correspondence with the content into which the digital watermark information is to be embedded.

42. An information processing method according to claim 41, wherein at least part of the digital watermark information is managed in encrypted form.

43. An information processing method according to claim 41, wherein at least part of the digital watermark information is managed in relation to the content into which the digital watermark information is to be embedded and to unique time information.

44. An information processing method according to claim 41, wherein at least part of the corresponding digital watermark information is supplied to an external device based

on content identification information after authentication is
performed with said external device.

45.   An information processing method according to claim
41, wherein the digital watermark information is generated by
modulating a basic pattern used for indicating information to
be embedded as a digital watermark according to
characteristics of the content and by encoding the information
to be embedded according to an amount by which the basic
pattern is modulated, and the modulation amount is managed as
part of the digital watermark information.

46.   An information processing method according to claim
41, wherein part of the digital watermark information
comprises at least one of information indicating a basic
pattern selected for embedding the digital watermark,
modulation information, and shifting information.

47.   A content processing apparatus for performing
processing concerning embedding of a digital watermark into a
content, comprising:

an embedding unit operable to embed the digital
watermark into the content, said embedding unit comprising:

a generator operable to generate the digital watermark;

an embedding unit operable to embed the digital watermark into the content;

a first transmitter operable to transmit the content provided with the embedded digital watermark; and

a second transmitter operable to transmit the digital watermark or information for reconstructing the digital watermark; and

a removing unit operable to remove the digital watermark from the content, said removing unit comprising:

a first acquiring unit operable to acquire the content provided with the embedded digital watermark;

a second acquiring unit operable to acquire the digital watermark or the information for reconstructing the digital watermark; and

a removing device operable to remove the digital watermark from the content by using the acquired digital watermark or the acquired information for reconstructing the digital watermark.

48. A content processing apparatus according to claim 47, wherein said removing unit further comprises a second

embedding unit operable to embed a second digital watermark into the content from which the previous digital watermark has been removed by said removing device.

49. A content processing apparatus according to claim 47, wherein said removing unit further comprises a second embedding unit operable to embed a second digital watermark into the content from which the previous digital watermark has been removed by said removing device, and a distributing unit operable to distribute the content into which the second digital watermark has been embedded.

50. A content processing method for performing processing concerning embedding of a digital watermark into a content, comprising:

embedding the digital watermark into the content, said embedding step comprising:

generating the digital watermark;

embedding the digital watermark into the content;

transmitting the content provided with the embedded digital watermark; and

transmitting the digital watermark or information for reconstructing the digital watermark; and

removing the digital watermark from the content, said removing step comprising:

acquiring the content provided with the embedded digital watermark;

acquiring the digital watermark or the information for reconstructing the digital watermark; and

removing the digital watermark from the content by using the acquired digital watermark or the acquired information for reconstructing the digital watermark.

51. A content processing method according to claim 50, further comprising embedding a second digital watermark into the content from which the previous digital watermark has been removed.

52. A content processing method according to claim 50, wherein said removing step further comprises embedding a second digital watermark into the content from which the previous digital watermark has been removed, and distributing the content into which the second digital watermark has been embedded.

53. A monitoring apparatus for managing additional information to be embedded into a content as a digital watermark, comprising:

an issuing unit operable to issue and supply the additional information in response to a registration request of the content, and to manage the additional information in correspondence with the content; and

a supply unit operable to supply the corresponding additional information of the content in response to a rewriting request of the additional information.

54. A monitoring apparatus according to claim 53, further comprising an acquiring unit operable to acquire the digital watermark representing the additional information or information for reconstructing the digital watermark, wherein said supply unit supplies the digital watermark or the information for reconstructing the digital watermark in response to the rewriting request of the additional information.

55. A monitoring method for managing additional information to be embedded into a content as a digital watermark, comprising:

issuing and supplying the additional information in response to a registration request of the content;

managing the additional information in correspondence with the content; and

supplying the corresponding additional information of the content in response to a rewriting request of the additional information.

56. A monitoring method according to claim 55, further comprising acquiring the digital watermark representing the additional information or information for reconstructing the digital watermark, wherein said supplying step supplies the digital watermark or the information for reconstructing the digital watermark in response to the rewriting request of the additional information.

57. A storage medium for physically storing a computer-readable software program which executes, on a computer system, processing for embedding additional information into a

content as a digital watermark, said computer-readable

software program comprising:

generating the digital watermark representing the

additional information;

embedding the digital watermark into the content;

transmitting the content provided with the embedded

digital watermark; and

transmitting the digital watermark or information

for reconstructing the digital watermark.

58. A storage medium for physically storing a computer-

readable software program which executes, on a computer

system, processing on a content into which additional

information is embedded as a digital watermark, said computer-

readable software program comprising:

acquiring the content provided with the embedded

digital watermark;

acquiring the digital watermark or information for

reconstructing the digital watermark; and

removing the digital watermark from the content by

using the acquired digital watermark or the acquired

information for reconstructing the digital watermark.

59. A storage medium for physically storing a computer-readable software program which executes management of digital watermark information to be embedded into a content on a computer system, said computer-readable software program comprising managing at least part of the digital watermark information in correspondence with the content into which the digital watermark information is to be embedded.

60. A storage medium for physically storing a computer-readable software program which executes processing concerning embedding of a digital watermark into a content on a computer system, said computer-readable software program comprising:

embedding the digital watermark into the content, said embedding step comprising:

generating the digital watermark;

embedding the digital watermark into the content;

transmitting the content provided with the embedded digital watermark; and

transmitting the digital watermark or information for reconstructing the digital watermark; and

removing the digital watermark from the content, said removing step comprising:

acquiring the content provided with the embedded digital watermark;

acquiring the digital watermark or the information for reconstructing the digital watermark; and

removing the digital watermark from the content by using the acquired digital watermark or the acquired information for reconstructing the digital watermark.

61. A storage medium for physically storing a computer-readable software program which executes monitoring processing for managing additional information to be embedded into a content as a digital watermark on a computer system, said computer-readable software program comprising:

issuing and supplying the additional information in response to a registration request of the content;

managing the additional information in correspondence with the content; and

supplying the corresponding additional information of the content in response to a rewriting request of the additional information.